



DEPARTMENT OF
ECOLOGY
State of Washington

MTCA Science Panel
November 23, 2009
Meeting Summary

Location

UW Botanical Gardens, Isaacson Classroom, 3501 NW 41st Street, Seattle

Science Panel Members present

Dr. Bruce Duncan (Chair)
Dr. Elaine Faustman
Dr. Mike Riley
Dr. Rosalind Schoof

Ecology staff present

Martha Hankins
Dawn Hooper
Peter Kmet
Craig McCormack

Members absent

Dr. Teri Floyd

Audience members

Janice Camp
Miyoko Sasakura

Meeting Summary

Ecology provided a brief update on ongoing efforts related to updating the MTCA cleanup regulation. Ecology has established two advisory committees, a MTCA/SMS Advisory Committee and a Sediment Workgroup, to provide advice and feedback on issues specific to the rule update. Ecology structured these committees recognizing that integrating cleanup requirements for sediments into the MTCA framework is a major focus of this rule making effort. These committees will meet approximately monthly from November 2009 through spring, 2010.

- Panel members asked to be added to the Rule Update Listserv
- Panel members asked for a link to the Rule Update Webpage

Ecology Presentation on Exposure Distributions and Probabilistic Analysis

Ecology reviewed and responded to Science Advisory Board recommendations regarding the development of the exposure distributions used for the Monte Carlo probabilistic analysis. This included different exposure models that incorporate age adjustments factors (not associated with early life exposure) that account for differences in exposure patterns between children and adults.

Discussion

Regarding the soil volatilization factor distribution, the Science Panel recommended that Ecology include a map showing the relationship between meteorological data used and Washington State climate zones. (Dr. Faustman offered that her students could help produce such a map.)

It was noted that a citation is needed for the table on page 9 of the Ecology report, Distributions and Probabilistic Analysis In Support Of the Model Toxics Control Act (MTCA) Cleanup Regulation Update, Science Panel Meeting, November 23, 2009.

The Panel discussed that the percent contribution to variance is highest for the soil ingestion factor. They recommend that Ecology write a letter to EPA requesting research on adult and child soil ingestion rates. Although there is low confidence in the uniform adult soil ingestion rate distribution the Panel noted that other scientific bodies (notably the Rocky Flat data) have used this value and it's reasonable for Ecology to do so. Ecology should revisit the soil ingestion rate data every time the MTCA cleanup regulation gets updated to see if any better data is available.

Also noted was the difficulty in the childhood data in extrapolating from short term to chronic exposures and need for chronic daily intake data.

The Panel concurs with of the probabilistic exposure models Ecology developed and recommends moving forward to address early life stage exposures using the same framework.

Additional tasks:

- Ecology should add a footnote to page 27 age/non-age adjusted "exposure."

Early Life Susceptibility to Carcinogens

To begin and facilitate the Science Panel discussions, Ecology presented three questions:

- Is the U.S. EPA supplemental guidance consistent with current scientific information on early life stage exposure to carcinogens with a mutagenic mode of action?
- The Cal-EPA has developed methods and policies for making early-life stage adjustments to carcinogens with other modes of action. Is this approach consistent with current scientific information on early-life stage exposure to carcinogens with other, non-mutagenic, modes of action?
- What sources of scientific uncertainty and variability should Ecology consider when evaluating these issues and potential changes to the MTCA Cleanup Regulation?

Discussion Highlights Early-Life Exposure

The Panel prefers that Ecology rephrase the first question to: Is the US EPA Supplemental Guidance consistent with current scientific information on early life stage susceptibility to carcinogens?

The Panel agreed that US EPA Supplemental Guidance is consistent with current scientific information on early life stage susceptibility to carcinogens; and notes that the more difficult question is when and how to account for this susceptibility. The Panel directed Ecology to consult “the Purple Book,” as the EPA RfD Guidance is known, for information regarding adjustments for sub chronic childhood exposures.

The Panel noted that the age brackets used for childhood exposure considerations depends on the questions being asked. The Panel recommended Ecology review information in footnote 21 on page 13 of Ecology’s Considerations of Early Life document. So that while the Panel agrees there is an increased susceptibility during early life, how to account for this susceptibility is not obvious.

Regarding whether Ecology should take an approach that separates out mutagenic or non-mutagenic chemicals, the Panel recommended that Ecology look further into what direction EPA is moving toward and suggested that Ecology define how it uses the term “mutagenic” in this context given that definitions vary across the EPA guidance. Ecology may want to make exposure adjustments so that future data regarding early life exposures will fit into the approach Ecology chooses. Panel members agreed they would like to work with Ecology on what age groups to use, including addressing how to accounting for in utero exposures.

Areas of Agreement & Follow-Up Items for Ecology

- There is sufficient and sound technical information and state/federal regulatory guidance regarding children’s susceptibility and the potential for early-life exposure to chemical carcinogens.
- The exposure models have been sufficiently developed by Ecology to proceed with a deterministic and probabilistic analysis to establish soil cleanup levels in consideration of early-life exposure to chemical carcinogens.
- For future Science Panel discussions on early-life exposure, Ecology needs to consult with the members of the Science Panel (individually or collectively) to further develop and refine the appropriate questions on early-life exposure.
- Members of the Science Panel raised concerns regarding how Ecology should account for *in-utero* exposure to chemicals carcinogens for the MTCA Cleanup Regulation Update.
- Members of the Science Panel raised concerns regarding how Ecology should account for exposure defaults that distinguish between children and adults (i.e., SIR, BW, dermal) in consideration of the application of Age Dependent Adjustment Factors / Age Sensitivity Factors (ADAFs/ASFs) to account for early-life exposure.

Additional Tasks:

- Provide Panel with information on the T1-17 and work by Lon Kissinger (EPA) on the Duwamish.

Draft Vapor Intrusion Guidance

Ed Jones (Ecology, Hazardous Waste and Toxics Reduction Program, NWRO) provided an overview of Ecology's draft vapor intrusion guidance document. A number of questions were presented.

- The draft guidance includes screening levels designed to provide a reasonably conservative approach for identifying potential vapor intrusion problems. Should additional chemicals of potential concern be included on the list?
- Do the draft recommendations for using the Johnson and Ettinger model for estimating indoor air concentrations seem reasonable?
- Are the recommendations for estimating the indoor air concentrations due to vapor intrusion by subtracting background measurements reasonable?
- Is the proposed screening distance of 100 feet from the plume within the range of what is considered scientifically defensible?
- Are the proposed vapor attenuation factors within a range of what is considered scientifically defensible? (Groundwater VAF = 0.001; Deep soil gas VAF = 0.01; Sub-slab soil gas VAF = 0.1)
- Is the proposal to use an additional factor of 10 to account for petroleum vapor attenuation in deep soil probes (subject to certain conditions) within a range of what is considered scientifically defensible?

Discussion

The Panel recommended that Ecology clarify that the list of chemicals included in the draft guidance document only includes chemicals for which inhalation toxicity data is available. The set of 45 chemicals Ecology chose not to include should be listed somewhere so that Ecology site managers could, if appropriate, evaluate risk on a site-by-site basis.

- The Panel asked Ecology for further information on this issue.

The Panel concurs with Ecology's definition of the edge of the plume boundary, and recommends that Ecology make the definition more prominent in the guidance.

The Panel recommends that Ecology provide citations to support the 100' rule.

The Panel supports Ecology's using temperature adjusted Henry's Law constants.

Members recommend that for shallow contaminated soil (less than 5 feet below ground surface) the screening steps in the guidance may not be protective and that site-specific evaluation would be needed.

The Panel agreed that the approach recommended for subtracting out background contamination in indoor and ambient air is reasonable.

Inhalation Unit Risk

Discussion on the following questions was deferred until the next meeting.

- Does the new EPA guidance provide a solid scientific foundation for evaluating revisions to the MTCA rule? [In other words, are these procedures consistent with current scientific information?]
- Is there additional scientific information and regulatory guidance on this issue that Ecology should consider during the rulemaking process?

Meeting summary approved on April 5, 2010.